Quality Control

August-23-12 1:37:3	1 PM		0.94	+ ∩ I						r age r
Item ID: D212 Revision ID:	2-664-107TRN		Accept	*N900	040	100)* s	Setup Star	*N	S1*
Item Name: Cross	stube Turning Detail							Stop	*N	S2*
Start Date: 23/08	8/2012 Start Qty: 1.00	*1*		Cust Item I	D:				_	
Required Date: 06/09	9/2012 Req'd Qty: 1.00	*1*	·	Customer:			*,			
Reference:										
Approvals: Pro	cess Plan: MUJ	Date: 12 08	73 Tooling:	Da	ate:	·	. R	tun Star	1/7	R1*
	: <u></u>	, ,		Da	ate:			Stop	` *N	R2*
Sequence ID/ Work Center ID	Operation Description		Set Up/ Run Hours	Tool ID	Tool #		Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr	•							· · · · · · · · · · · · · · · · · · ·	
D212-664-147	Rev B(DE0)									
100 *100* Mori Seiki	MORI SEIKI CNC LA	THE LARGE	0.00							
Mori Seiki CNC Lathe Lar		with sand & install plugs	DT8534 on both ends as po	er Folio FA705					*	min
	` -	st side as per Folio FA113								12/08/
	FOLIO RE DWG RE* *Use mill	ransition lines only, **do n EV:	eatedly with file card.	ŧ				<i>"</i> ,		
110	QC1- Inspect dimension	ons to dimension sheet	0.00				ŗ	^	,	
*11 0 *	Мето		0.00	8 .				-Ø-	·	

NCR: Y	es / No				WORK ORDER NON-	CONI	FORN	//ANCE / UPI	DATE				
				.=				•		QA Closed:	Date	2:	
Work Orde	r:				DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Part N					Rework Scrap		Skid-tube Crosstube Machining Small Fab			Pro	Water Jet d. Eng. Coor.	Engineering Quality	
NCR N	0				Use-as-is Work Order Update			noforming Large Fab	Finishing Composite	Other			
Root				Descri	ption of work order update	In	itial	Act	ion	Sign &			
Cause	Date	Step	Qty	(or Non-conformance	Chie	ef Eng	Descr	ription	Date	Verification	QC Inspector	
Doc/Data													
Equip/Tooling											i		
Operator													
Material													
Setup	_												
Other	_												
Process	_				•								
Supplier	_	}											
Training													
Unapproved		i .		,,,			CATE					•	
						AULI	CATE	JUKY					
Landin F	g Gear Bending				General Bend		arain			Ovalized	Г	Pressure/Forced	
	Centre No	nt Concor	ntric to C	, -	BOM/Route	—	ardwa	ro		Over/Under	toloranco	Temperature/Cure	
	Cracks	or conce	mine to C	″³	Broken/Damaged	\vdash		on Incomplete		Part Incorre	⊢	Weld	
	Crushed/	Crimned		-	Burrs	\vdash		ions Incomplete/l	Inclear	Part Lost/Mi	⊢	Wrong Stock Pulled	
<u> </u>	Cuffs	crimpeu.	-		Contamination	—		nance	Silcieal	Part Moved	L	Wiong stock i uncu	
<u> </u>				Countersink	\vdash	viainte vislabe		<u> </u>	Positioned V	Vrong			
 	Inspection		Tube	-	Cut Too Short	\vdash	Misreac			Power Loss/		Other	
 	Ripples in	•			Drill Holes	\vdash	Offset	-	<u> </u>]. 36. 2333/		1	
	Torque W		xtrusion		Drawing	\vdash		Calibration					
	Turning Sequence Finish					Out of Sequence							

Outside Dimensions

DQA:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Page 2

August-23-12 1:37:31 PM

Item ID: D212-664-107TRN Accept *N900040100* Setup Start **Revision ID:** Stop Crosstube Turning Detail Item Name: Start Date: 23/08/2012 Start Oty: 1.00 **Cust Item ID: Required Date:** 06/09/2012 Rea'd Otv: 1.00 **Customer:** Reference: Run Start Approvals: Process Plan: Date: Tooling: Date: Stop Date: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Set Up/ Tool # Plan Accept Reject Reject Insp. Work Center ID Description Qty **Run Hours** Code **Qty** Number Stamp 120 0.00 MORI SEIKI CNC LATHE LARGE *120* Mori Seiki 0.00 Memo Mori Seiki CNC Lathe Large 1-Turn second side as per Folio FA705 2-Blend transition lines only, **do not sand whole tube**: *Use mill bastard file, brush file repeatedly with file card. *Do not use sandpaper coarser than 320 grit. FOLIO REV: DWG REV: 3- Remove plugs and sand 130 QC1- Inspect dimensions to dimension sheet 0.00 *130* QC 0.00 Memo Quality Control

NCR:	Yes	1	No

DQA:	Date:	
- <u> </u>		

NCR: Y	'es	/ No				WORK ORDER NON-	CON	IFORN	VIANCE / UP		QA Closed:	Date:	:
						DISPOSITION		· · · · · ·	4 .	AGAINST DE		/PROCESS	
Work Orde Part N	Rework Part No. Scrap Use-as-is							, · · · · ·	Skid-tube Crosstube Water Jet Engire Machining Small Fab Prod. Eng. Coor. Cortemporaring Finishing Rec/Store/Packaging				
NCR N	lo.					Work Order Update]		Large Fab	Composite		Supplier	Other
Root					Descr	ription of work order update	lr	nitial	Ac	tion	Sign &		
Cause		Date	Step	Qty		or Non-conformance	Chi	ef Eng	Desc	ription	Date	Verification	QC Inspector
oc/Data quip/Tooling	_								·			,	
perator									-				•
/aterial													
etup													
ther	\neg												1.
rocess													
upplier													
raining													
Inapproved											<u> </u>		
		_			_		FAUL	CATE	GORY				
Landir		1				General					,	_	
		Bending			_	Bend	\vdash	Grain			Ovalized	_	Pressure/Forced
		Centre No	t Concer	ntric to C	o/s	BOM/Route	\vdash	Hardwa			Over/Under	-	Temperature/Cure
		Cracks			_	Broken/Damaged	-		ion Incomplete	<u> </u>	Part Incorre	 	Weld
		Crushed/0	Crimped.		<u> </u>	Burrs	-		ions Incomplete/	'Unclear	Part Lost/Mi	issing	Wrong Stock Pulled
		Cuffs			_	Contamination	-	Mainte		<u> </u>	Part Moved		
		Heat Trea			<u> </u>	Countersink		Mislabe		<u> </u>	Positioned V		¬
	$\overline{}$	Inspection		Tube	·	Cut Too Short		Misread	d		Power Loss/	'Surge	Other
		Ripples in			_	Drill Holes	-	Offset					
		Torque W			` _	Drawing	1		Calibration				
1		Turning So	equence			Finish	11	Out of S	Sequence				

Outside Dimensions

Wave/Twist in Tube

August-23-12 1:37:31 PM

Item ID: **Revision ID:** D212-664-107TRN

Crosstube Turning Detail

Accept

N900040100

Setup Start

Item Name: Start Date:

23/08/2012

Start Otv: 1.00

Cust Item ID:

Required Date: 06/09/2012

Reg'd Otv: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

OC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/ Work Center ID 140

Operation Description

Set Up/ **Run Hours** Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject

Insp. Number Stamp

140

OC Quality Control

Memo

OC8- Inspect parts - second check

0.00

0.00

145

145

Crosstubes

Memo

0.00

0.00

Crosstubes

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150

150

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

0.00

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

					•						DQA:	Date	:
NCR: Y	res /	No				WORK ORDER NON-	100	NFORM	MANCE / UPDATE		QA Closed:	Date	
						DISPOSITION			AGAIN		PARTMENT		
Work Orde	er:						_			_			, –
Part No.						Scrap Machining Use-as-is Thermoforming			noforming Finish	Il Fab Prod. Eng. Coor. Qualit Shing Rec/Store/Packaging Othe			Engineering Quality Other
NCR N	No. —					Work Order Update	J		Large Fab Compos	ite[ļ	Supplier	
Root					Descri	ption of work order update	T	Initial	Action		Sign &	•	
Cause		Date	Step	Qty	(or Non-conformance	Cr	nief Eng	Description		Date	Verification	QC Inspector
Doc/Data							T	`					
Equip/Tooling											!		
Operator													
Material													
Setup													
Other	Ш												
Process				·			1						
Supplier											,		
Training													
Unapproved							丄						
						F	AUI	LT CATE	GORY				
Landi	ng Gea	ar				General	_	_	•	_	-		-
	$oldsymbol{oldsymbol{ o}}$	ending			<u> </u>	Bend	<u></u>	Grain		_	Ovalized		Pressure/Forced
	$oldsymbol{oldsymbol{ ext{H}}}$		t Conce	ntric to (o/s	BOM/Route	L	Hardwa	ire ·		Over/Under	<u> </u>	Temperature/Cure
1	—₁	acks				Broken/Damaged	L	⊣ '	ion Incomplete		Part Incorre	├	Weld
			Crimped.			Burrs		-1	tions Incomplete/Unclear		Part Lost/M	issing	Wrong Stock Pulled
	Щcı	ıffs				Contamination	_	Mainte	enance	<u> </u>	Part Moved		
	l He	eat Treat	t		1	Countersink		Mislabe	eled	- 1	Positioned V	Vrong	

Misread

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Power Loss/Surge

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish Folio August-23-12 1:37:31 PM Item ID: D212-664-107TRN **Revision ID:** Item Name: Crosstube Turning Detail

Accept

N900040100

Setup Start

Start Date:

23/08/2012

Start Otv: 1.00 Rea'd Otv: 1.00

Operation

Description

Packaging

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan:

Required Date: 06/09/2012

Date:

Tooling:

Date:

Run

OC:

Date:

SPC (Y/N):

Date:

Stop

160

Sequence ID/

Work Center ID

QC5- Inspect part completeness to step on W/O

Set Up/ Run Hours 0.00

Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject Insp.

Number Stamp

160 OC

Quality Control

Memo

0.00

170

170 Packaging

Packaging

Memo

0.00

0.00

Identify and stock in kanban rack

12-09-11

180

QC21- Final Inspection - Work Order Release

0.00

120

Memo

0.00

Quality Control

								DQA:	Date:				
NCR: Yes	/ No			WORK ORDER NON-	CONFORI	MANCE / UPDA		QA Closed:	Date:				
Work Order:				DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No.				Rework Scrap Use-as-is Work Order Update	Thern	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other						
Root				Description of work order update	Initial	Action	n	Sign &					
Cause	Date	Step	Qty	or Non-conformance	Chief Eng	Descript	tion	Date	Verification	QC Inspector			
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training										•			

Landin	g Gear	General	 _	 _	
	Bending	Bend	Grain	Ovalized	Pressure/Forced
	Centre Not Concentric to O/S	BOM/Route	Hardware	Over/Under tolerance	 Temperature/Cure
	Cracks	Broken/Damaged	Inspection Incomplete	Part Incorrect	Weld
	Crushed/Crimped_	Burrs	Instructions Incomplete/Unclear	Part Lost/Missing	Wrong Stock Pulled
	Cuffs	Contamination	Maintenance	Part Moved	
	Heat Treat	Countersink	Mislabeled	Positioned Wrong	_
	Inspection Strip in Tube	Cut Too Short	Misread	Power Loss/Surge	Other
	Ripples in Bend	Drill Holes	Offset		
	Torque Waves in Extrusion	Drawing	Out of Calibration		
	Turning Sequence	Finish	Out of Sequence		
Ī	Wave/Twist in Tube	Folio	Outside Dimensions		

FAULT CATEGORY

Unapproved

Picklist Print

August-23-12 [1:37:35 PM]

Work Order ID: 89481

Parent Item:

D212-664-107TRN

Parent Item Name: Crosstube Turning Detail

89481

D212-664-107TRN

Start Date: 23/08/2012

Required Date: 06/09/2012

Start Oty: 1.00

Required Oty: 1.00

Comments:

IPP Rev:A New Issue 08-03-06 DD Verified by:ec IPP Rev B Removed polish 08.04.02 EC verified: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6019-128		Manufactured	No			110	Each	48.0000	1	1	-		
D6040 40	0								**				

116019-178

Crosstube Material

Location	Loc Oty	Loc Code
LG	48	
69803	17	
75635	24	
79741	7	

NCR: Yes / No.

WORK ORDER NON-CONFORMANCE / UPDATE

DQA:	Date:	

NCK: 1	res /	NO				WORK ORDER	NON-C	ONFOR	VIANCE / OF		QA Closed:	Date	:
Work Orde	or.					DISPOSITIO	ON			AGAINST DE	PARTMENT,	/PROCESS	
Part N					······································]			Crosstube Small Fab	Pro	Water Jet d. Eng. Coor.	Engineering Quality	
NCR N	No	•			·.	Use Work Order Up	-as-is Thermoforming Finishing Rec/Store/Packaging odate Supplier					Other	
Root					Descri	ption of work order u	pdate	Initial	Act	tion	Sign &	· · · · · · · · · · · · · · · · · · ·	
Cause	D	ate	Step	Qty	(or Non-conformance		Chief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data							ŀ						
Equip/Tooling		İ	_										
Operator			,							·			
Material		İ					1						
Setup						•							
Other		[·				
Process													
Supplier						•							
Training			i			•							·
Unapproved		i		l							,	1	
			·				FA	ULT CATE	GORY				
Landi	ng Gear					General	Г	— .		<u> </u>	1	Г	¬_ ,_ ,
	├ ──┤	ding				Bend		Grain		<u> </u>	Ovalized	-	Pressure/Forced
			t Concer	ntric to	^{5/S}	BOM/Route		Hardwa			Over/Under	} -	Temperature/Cure
	Cra					Broken/Damaged	}		ion Incomplete		Part Incorre	⊢	Weld
			rimped.		ļ	Burrs	}	_	tions Incomplete/	Unclear	Part Lost/M		Wrong Stock Pulled
_	Cuf					Contamination	-		enance		Part Moved		
	-	t Treat		Tl	-	Countersink		Mislabe		-	Positioned \		Other
	_		Strip in	upe	<u> </u>	Cut Too Short Drill Holes	o	— Misread Offset	u		Power Loss/	Surge	Other
		oles in	вепа aves in E	'wterrois	. ⊢	╡	· ·		Calibration				
	_	•			' ├-	Drawing Finish			Calibration Sequence				
	_	-	equence ist in Tub		-	Folio	·	_	oequence Dimensions				
	vva	- C/ VV	34 111 TUL	.		II VIIV		- IOUGSIUC					

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DART AEROSPACE LTD	Work Order:	89481
Description: Crosstube Assembly (205/212/412 Low Fwd)	Part Number:	D212-664-147
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	spection Sheet wing Dimension			Accept	Reject	Method of Inspection	Comments
	0.313	+/-0.010	.313	1		vern	CWC-08
	2.360	+0.005/-0.000	2361			Ì	
	2.360	+0.005/-0.000	2-363				
	2.366	+0.005/-0.000	2.370				
	2.473	+0.005/-0.000	2.478	/			
	2.573	+0.005/-0.000	2.573			:1	
4	2.673	+0.005/-0.000	2.678			•	
SIDE	2.750	+0.005/-0.000	2-750	,			
	2.750	+0.005/-0.000	2.750	1		1	
Γ					_		
	0.313	+/-0.010	,313	-		vern.	CNC-08
	2.360	+0.005/-0.000	7.363			. 1	
	2.360	+0.005/-0.000	2,365				
	2.366	+0.005/-0.000	1.371	//			
	2.473	+0.005/-0.000	2.478	. /			
	2.573	+0.005/-0.000	2.573				
ш	2.673	+0.005/-0.000	10000				
SIDE	2.750	+0.005/-0.000	2-750	/			
"	2.750	+0.005/-0.000	2.750	1		Ţ-	
		,	•		*****		
	0.126.528	+/-0.020	126.528			tape	16-22



												DQA:	va	ite:	
NCR:	Yes	/ No				WORK ORDER NON-CONFORMANCE / UPDATE						QA Closed:		ite:	
										4.04141677.0	_			te.	
Work Ord	er:					DISPOSITION			AGAINST DEPARTMEN				PROCESS		
Part No.						Rework Skid-tube Crosstube Scrap Machining Small Fab Thermoforming Finishing		Water Jet Prod. Eng. Coor. Rec/Store/Packaging			Engineering Quality Other				
NCR 1	No					Work Order Update									
Root	Description of work or				ption of work order update		Initial	Ac	tion		Sign &				
Cause		Date	Step	Qty	or Non-conformance		Cr	nief Eng	Desc	ription		Date	Verificatio	n	QC Inspector
Doc/Data															
Equip/Tooling									•						
Operator														1	
Material	Ш														
Setup	Ш						-								
Other															
Process															
Supplier															
Training															
Unapproved		-													
						F	AUI	LT CATE	GORY						
Landi	ing Ge	ear			·	General		_		- -	_	•		_	1
	L I €	Bending				Bend	L	Grain		L	_	Ovalized		L	Pressure/Forced
	Щ	Centre No	ot Concer	ntric to (o/s	BOM/Route		Hardwa	re			Over/Under	tolerance		Temperature/Cure
*	Щ	Cracks				Broken/Damaged	L	Inspecti	on Incomplete	L		Part Incorre	ct	L	Weld
	Щ	rushed/	Crimped.			Burrs		Instruct	ions Incomplete/	Unclear		Part Lost/M	ssing		Wrong Stock Pulled
		uffs				Contamination		Mainte	nance			Part Moved			
	ال	leat Trea	t			Countersink		Mislabe	led			Positioned V	Vrong		-
1		 				Cut Too Short		Misread				Power Loss/	Surge		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

174 - law has been

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

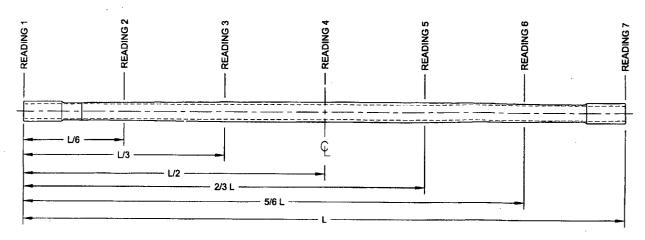
Drill Holes

Drawing

Finish

DART AEROSPACE LTD	Work Order:	29481
:Description: Crosstube Assembly (205/212/412 Low Fwd)	Part Number:	D212-664-147
.Inspection Dwg: D212-664-147 Rev: B	:	Page 2 of 2

WALL THICKNESS MEASUREMENT



	WALL	THICKNESS I	MEASUREME	NT (IN)	Deviation	
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	. []	.113	.126	.127	-016	
READING 2	.106	.103	1,39	.136	.036	
READING 3	.196	194	.237	230	.043	
READING 4	.365	.300	.3/5	.312	-010	0.048"
READING 5	,216	,205	213	.227	-077	
READING 6	-118	-116	, 121	-129	,013	
READING 7	.113	-118	.123	121	-010	

Calibration Result

Actual Block Thickness: __\$00__________

Sitescan 250 Measured Thickness: 500 - 505

Measured by: Myn.	Audited by: Tw	Prototype Approval:	N/A
Date: () /08/30	Date: 12-9-4	Date:	N/A

Rev	Date	Change	Revised by	Approved
Α	08.11.07	New Issue (P/O D212-664-107)	KJ/EC	7
В	10.02.02	Dimension 126.528 was 126.53	KJ IA	11
С	12.06.04	Wall thickness form added	KJ OX	//
			·	-83

			DQA:	Date:	
ICR:	Yes ·/	NO WORK ORDER NON-CONFORMANCE / UF	PDATE		

									QA Closed:	Date	2:
Work Orde	r:				DISPOSITION			AGAINST DEF	PARTMENT	PROCESS	
Part N	0				Rework Scrap Use-as-is Work Order Update	Skid-tube Crosstube Water Jet Engineering Machining Small Fab Prod. Eng. Coor. Quality Thermoforming Finishing Rec/Store/Packaging Other Large Fab Composite Supplier					
Root				Descri	ption of work order update	Initial	Action	n	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Descript	tion	Date	Verification	QC Inspector
Ooc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved											
опарріочеа		<u> </u>	<u> </u>	<u> </u>	F.	AULT CATE	GORY				
Landin	ng Gear				General			· · · · · · · · · · · · · · · · · · ·			
	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs			o/s	Bend BOM/Route Broken/Damaged Burrs Contamination	Inspecti Instruct Mainte	Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance		Ovalized Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved		Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled
,	Inspection Ripples in	Heat Treat Countersink Inspection Strip in Tube Cut Too Short Ripples in Bend Drill Holes Torque Waves in Extrusion Drawing				Misread Offset	Mislabeled Misread Offset Out of Calibration			Vrong Surge	Other
	Turning Sequence Finish Wave/Twist in Tube Folio				Out of Sequence Outside Dimensions						

Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	
2				CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
	<u> </u>	<u> </u>	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	4 2 2		D2893-1	SUPPORT
5			D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
. 7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
101	AVR	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8602 CLASS B2 SEALANT)

GENERAL NOTES:

D

R

MATERIAL: MANUFACTURED FROM D6019-128

2) FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED. UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES: 0.005 TO 0.010 MAX.

IDENTIFICATION: SCRIBE DART PART NUMBER 'D212-664-XXX' AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.

WEIGHT: D212-664-147B = 24.2 bs (PER IIN-D212-664)

D212-664-147B = 24.2 lbs (PER IIN-D212-664)

- PART IS SYMMETRIC ABOUT CENTERLINE.
 WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6%

10) SEND PROCESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6 BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.

11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

12) INSTAL D. 2039-13 USPPORT USING 0.3° TO 0.6" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

13) INSTALL M321920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1

14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SUPPORT.

14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SUPPACE OF THE TUBE. THE OUTSIDE

- SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUTHAS
- NOT BOTTOMED-OUT AFTER TORQUING.

 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.

17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP COPY RETURN TO **ENGINEERING** UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER MLJ

12/08/23

DEO ATTACHED

| PER ECN#11.6 H LO3.26 UNDER REVIEW

8			OTES/PART LIST; UPDATE TO RDS; ADD -147B (ZN C4-2, D4-2)	RF	09.09.30			
Α	NEW IS	SSUE		CP	07.07.07			
REV.			DESCRIPTION	BY	DATE			
DESIGN		P	DART AEROSP	ACE	LTD			
DRAWN		RF	HAWKESBURY, ONTAR					
CHECK	D	P	DRAWING NO.		REV. B			
MFG. AF	PPR.	72	D212-664-147 SHEET					
APPRO	√ED	140	TITLE		SCALE			
DE APPR.			CROSSTUBE (205/212/412 LOW FWD) NTS					
DATE	09.0	9.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD PES DOCUMENT OF PRIVATE AND CONFIDENCE, AND IS SUPPLED ON THE OFFICES CONCIDENT THAT IT IS NOT TO SELVED FOR AN INTERPRESED PROJECT AND AND A CONCIDENCE, LTD. WIRTTEN REPRESED FROM AND AND A CONCIDENCE, LTD.					

									•		DQA:	Date:	
NCR: Y	es/	/ No				WORK ORDER NON-C	CON	FORM	MANCE / UPI		QA Closed:	Date:	
Work Orde	er:					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
Part No						Rework Scrap Use-as-is Work Order Update	Machining Small Fab Thermoforming Finishing			Small Fab Finishing	Pro Rec/Stor	Engineering Quality Other	
Root					Descri	ption of work order update	lr	nitial	Act	ion	Sign &		
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	\Box_{α}	┥				Rurrs	П	Instructions Incomplete/Unclear			Part Lost/Mi	ssing	Wrong Stock Pulled

Maintenance

Out of Calibration
Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

and the second

Part Moved

Positioned Wrong

Power Loss/Surge

Other

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

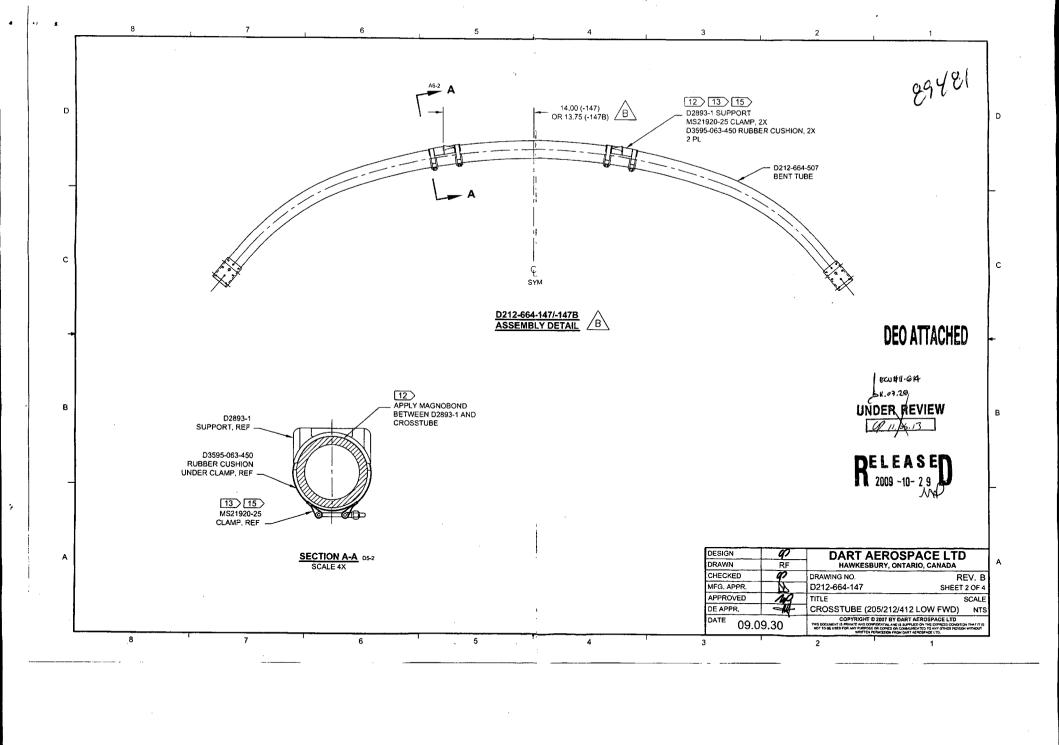
Ripples in Bend

Cuffs

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion



											DQA:	Date	ŧ
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		,									QA Closed:	Date	:
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Part No.						Scrap Use-as-is	ap Machining Small Fab		}	ł.	d. Eng. Coor.	. Quality Other	
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		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged	П	Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/l	Jnclear	Part Lost/M	issing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	nance		Part Moved	_	-
		Heat Trea	it	*		Countersink	П	Mislabe	led		Positioned \	Vrong	7
		Inspection	n Strip in	Tube		Cut Too Short	П	Misread	•		Power Loss/	Surge	Other
	Ripples in Bend					Drill Holes	П	Offset				_	

Out of Calibration

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

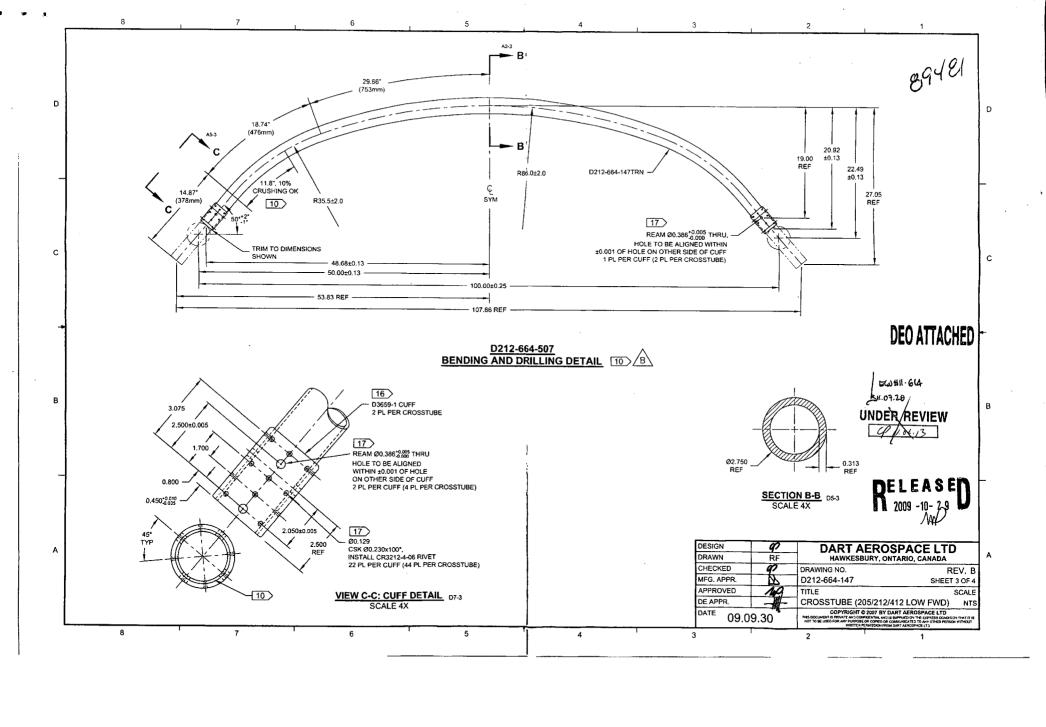
Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

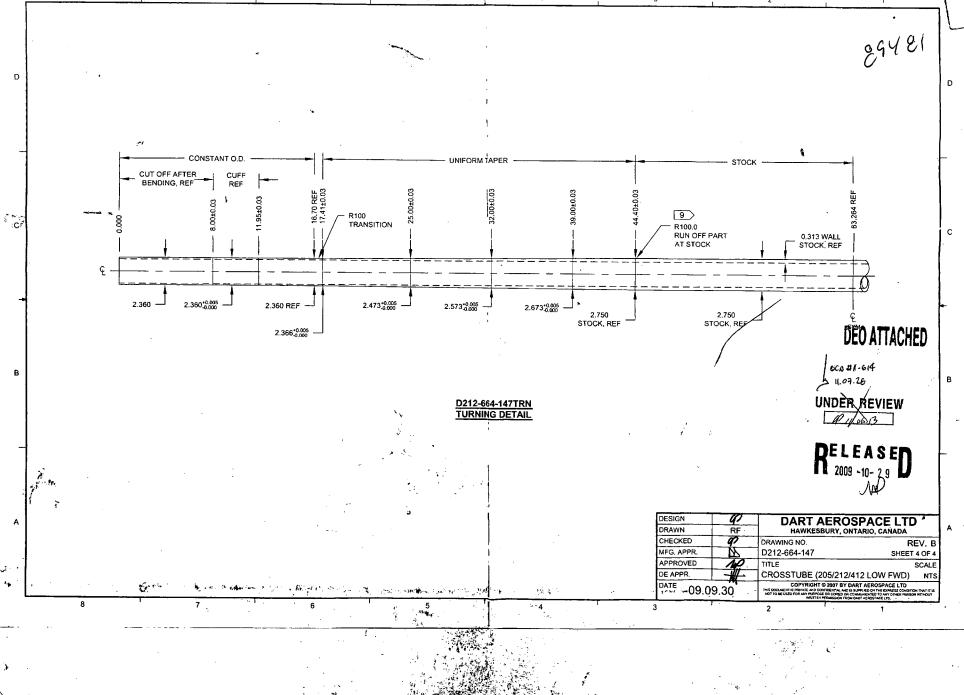


									DQA.	Date.			
NCR: Y	es / No				WORK ORDER NON-C	ON	FORM	NANCE / UPDATE					
									QA Closed:	Date:			
Work Orde	r·				DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Work Orac			· · · · · · · · · · · · · · · · · ·		Rework	1		Skid-tube Crosstube		Water Jet	Engineering		
Part N	0.				Scrap			Machining Small Fab	Pro	d. Eng. Coor.	Quality		
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·	Cracks			<u> </u>	Broken/Damaged	-	-	on incomplete	Part Incorre	<u> </u>	Weld		
}	_	/Crimped	-	-	Burrs	-		ions Incomplete/Unclear	Part Lost/Mi	ssing	Wrong Stock Pulled		
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-		eat on Strip in	Tubo	-	Countersink Cut Too Short	-	Mislabe Misreac	, · · · · · · · · · · · · · · · · · · ·	Positioned V Power Loss/		Other		
ŀ	Ripples		iuse		Drill Holes	-	offset	Į	rower Loss/	Juige	Totalei		
· }	⊣ ∵		Extrusio	, H	Drawing		,	Calibration					
ŀ	Torque Waves in Extrusion Turning Sequence				Finish	-		Sequence					

Outside Dimensions

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Wave/Twist in Tube



			DQA:	Date:	
NCR:	Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE			

								<u> </u>	QA Closed:	Date:	
Work Orde	r:				DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part No					Rework Scrap Use-as-is Work Order Update	Thern	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	Pro Rec/Stor	Engineering Quality Other	
Root	Descrip				ption of work order update	Initial	Ac	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material			•								
Setup Other Process Supplier											
Training Unapproved											
						AULT CATE	GORY				
Landin	ng Gear				General			,	1		7
-	Bending Centre N Cracks	ot Conce	ntric to (o/s	Bend BOM/Route Broken/Damaged	Grain Hardwa	ire ion Incomplete		Ovalized Over/Under tolerance Part Incorrect		Pressure/Forced Temperature/Cure Weld
	Crushed/Crimped. Cuffs				Burrs Contamination	Mainte		/Unclear	Part Lost/M Part Moved	_	Wrong Stock Pulled
-	Heat Treat Inspection Strip in Tube			-	Countersink Cut Too Short	Mislabe Misrea			Positioned V Power Loss/		Other
	Ripples in Torque V		extrusio	, -	Drill Holes Drawing	Offset Out of	Calibration				
	Turning S				Finish	Out of	Sequence				
Ī	Wave/Twist in Tube Folio				Folio	Outside	Dimensions				

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DRAWING NO.	TITLE		REV. B	DART AEROS	SPACE LTD	D.E.O. NO.		SHEE	T NO.	SCALE
D212-664-147	CROSSTUBE	ASS'Y (205		ENGINEERIN		D212-664-1	47-B-1	SHEET		NTS
DRAWN 97)	CHECKED /	<i>US</i>	MFG. APPR.		APPROVED \smile	W.	DE APPR.	#	
DATE 11.07.	.15	DATE //	1,07.20	DATE 11.0	7-21	DATE	7 /-	DATE	11.07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
			į	ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
		-	.:	TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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NCR:	Yes	/	No
11011.	,	,	

WORK ORDER NON-CONFORMANCE / UPDATE

	·
DQA:	Date:

	•										QA Closed:	Date	:
Work Orde	or:				DISPOSITION				AGAIN	ST DE	PARTMENT	/PROCESS	
Work Orde	=1.	 	<u></u>		Rework	7 I	Skid-tube Crosstube			he□	* ^f	Water Jet	Engineering
Part No. Scrap					1 1		Machining	Small F	\vdash	Pro	d. Eng. Coor.	Quality	
, are in					Use-as-is				Other				
NCR N	۱o.				Work Order Update	┤ 		Large Fab	Compos	~ 	,	Supplier	
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Root				Descr	iption of work order update	Ini	tial	Ac	tion	الإر	Sign &		•.
Cause	Date	Step	Qty		or Non-conformance	Chie	f Eng	Desc	ription	۲.	` Date	Verification	QC Inspector
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Operator						1.					:		
Material							1	•	•				
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	Cracks				Broken/Damaged	In	rspection	on Incomplete			Part Incorre	ct _	Weld
	Crushed,	/Crimped			Burrs	Ir	nstructi	ions Incomplete,	/Unclear		Part Lost/M	issing	Wrong Stock Pulled
	Cuffs				Contamination	\square	/lainte	nance			Part Moved		-
	Heat Tre	at		Γ	Countersink	\square N	/islabel	led			Positioned V	Wrong _	_
	Inspection Strip in Tube Cut Too Short				Cut Too Short	\square N	∕isread	1			Power Loss/	'Surge	Other
	Ripples i	n Bend			Drill Holes		Offset				- 		
	Torque V	Vaves in I	Extrusio	n [Drawing	\square	ot of C	Calibration					
	Turning :	Sequence	!	. [Finish		ot of S	equence					
	Wave/Tv	wist in Tul	be		Folio	По	Outside Dimensions						